Amendments to the Claims

This listing of claims will replace all prior versions, and listings of claims, in the application.

Listing of Claims

Claim 1 (canceled)

Claim 2 (currently amended): The method of claim ~~1~~ 13, further including the step of (f) providing a signal to an operator to indicate the occurrence of an artifact or to identify optical data that are suspect.

Claim 3 (currently amended): The method of claim ~~1~~ 13, wherein the optical data comprises reflectance measurements derived from introduction of light at at least one light introduction site by means of at least one light introducing element and collection of light at at least one light collection site by means of at least one light collecting element, the at least one light introducing element and the at least one light collecting element being in contact with the tissue.

Claim 4 (currently amended): The method of claim ~~1~~ 13, wherein the optical data are collected in a sequential manner to determine a change in blood pressure.

Claim 5 (currently amended): The method of claim ~~1~~ 13, wherein the optical data are collected in a sequential manner to determine a change in at least one value selected from the group consisting of blood oxygen saturation, the concentration of hemoglobin, value of hematocrit, or the concentration of glucose.

Claim 6 (currently amended): The method of claim ~~1~~ 13, wherein the electromagnetic radiation has a wavelength in the range of from about 400 nm to about 2200 nm.

Claim 7 (currently amended): The method of claim ~~1~~ 13, wherein the electromagnetic radiation has a wavelength in the range of from about 400 nm to about 1100 nm.

Claim 8 (currently amended): The method of claim ~~1~~ 13, wherein the optical data is collected sequentially.

Claim 9 (currently amended): The method of claim ~~1~~ 13, wherein ~~the optical data is independent of the cardiac pulse~~ the algorithm employs a user-selected threshold and the slope parameter to detect motion artifacts in optical signals that do not depend on the periodicity of heartbeats.

Claim 10 (currently amended): The method of claim ~~1~~ 13, wherein the algorithm is applied to the optical data in real-time.

Claim 11 (currently amended): The method of claim ~~1~~ 13, further comprising the step of alerting the operator of an occurrence of an artifact.

Claim 12 (currently amended): The method of claim ~~1~~ 13, further comprising the step of alerting the operator to exclude data that contains an artifact from subsequent calculation.

Claim 13 (currently amended): ~~The method of claim 1,~~ A method for identifying artifacts in optical measurements conducted for the purpose of determination of concentration of an analyte in a tissue, or value of a physiological parameter, or a combination of the foregoing, the method comprising the steps of:

(a) providing an apparatus for measuring at least one optical property of the tissue;

(b) introducing electromagnetic radiation at at least one wavelength into the tissue by means of the apparatus;

(c) collecting optical data from the tissue over a selected period of time;

(d) introducing the collected data into an algorithm to identify an artifact in the optical data, the artifact resulting from movement of the probe or the tissue during a brief period of time; and

(e) determining whether an artifact has appeared in the optical data,

wherein a set of values is calculated from the optical data, which optical data comprise a plurality of data points, the values selected from the group consisting of:

$$S(i) = [1 - P] \bullet S(i-1) + P \bullet [X(i) - X(i-1)] \quad (1)$$

$$A(i) = [1 - P] \bullet [A(i-1) + S(i)] + P \bullet X(i) \quad (2)$$

$$D(i) = | X(i) - A(i) | \quad (3)$$

Where:

N = effective quantity of data points in the moving average for the algorithm (N = value greater than 1, as specified by user)

Dc = artifact threshold value for D(i) (Dc = value greater than 0, as specified by user)

P = algorithm constant (P = 2/[N + 1])

i = current data point number (i is greater than 1)

X(i) = value of the current data point

X(i-1) = value of the previous data point

X(1) = value of the first data point

S(i) = value of slope parameter at the current data point

S(i-1) = value of slope parameter at the previous data point

S(1) = value of slope parameter at the first data point (S(1) = 0)

A(i) = value of moving average at the current data point

A(i-1) = value of moving average at the previous data point

A(1) = value of moving average at the first data point (A(1) = X(1))

D(i) = absolute difference between X(i) and A(i) at the current data point.